The Influence of Human Development Index Composite Indicators on Economic Growth in Bangka Belitung Province 2015-2022

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Abstract : *The Bangka Belitung Human Development Index (IPM) shows an increase of 0.22 percent from 2021 and is ranked 16th out of 34 provinces in Indonesia. Meanwhile, the economic conditions of the Bangka Belitung Province during the 2015-2022 period showed a declining pattern due to the contraction of the Covid-19 pandemic and changes in government regulations regarding tin exports but managed to revive in 2021. Several studies have shown a positive relationship between the Human Growth Index and economic growth. Therefore, this study aims to analyze the HDI Composite Indicators, namely health, education and the economy on economic growth in Bangka Belitung for the 2015-2022 period. The analytical method used is panel data regression with the Pooled Least Square (PLS) approach, Fixed Effect Model (FEM) and Random Effect Model (REM). The results of this study state that the economic indicator, namely the Per Capita Expenditure (PP) variable, has a positive and significant influence in increasing the Gross Regional Domestic Product (GRDP) in the Bangka Belitung Province.*
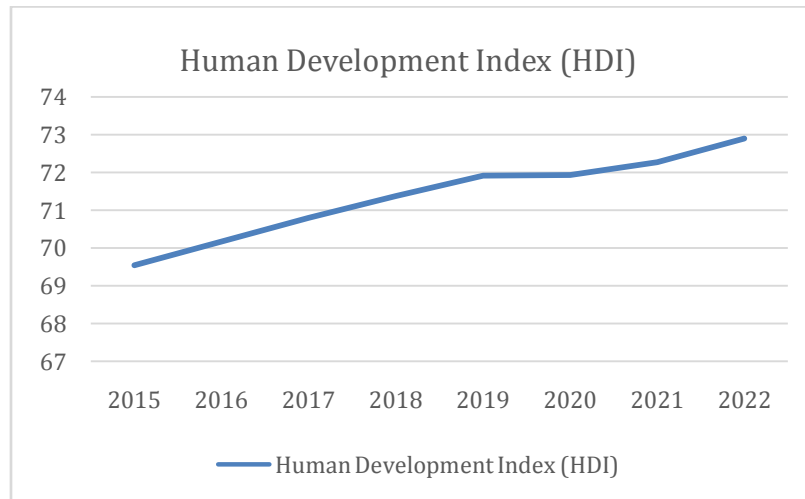
Keywords: Human Development Index, Economic Growth, Bangka Belitung

I. INTRODUCTION

The high level of economic growth does not guarantee the success of the development of a nation but also includes the quality of its human beings. There are still many countries that have high economic growth but the quality of human development is still low. In Indonesia, human development continues to progress. Data from the Central Statistics Agency (BPS) for 2022 states that since 2016 Indonesia's human development has increased from "moderate" to "high" levels. During 2015–2022, Indonesia's HDI increased by an average of 0.77 percent per year, from 69.55 in 2015 to 72.91 in 2022. After experiencing a slowdown in 2020 due to the COVID-19 pandemic, in 2021 and 2022 the increase in Indonesia's HDI continues to improve along with the handling of the COVID-19 pandemic that is going well and the recovery of Indonesia's economic performance [1].

Geographically, the Bangka Belitung Islands Province is located east of Sumatra Island. Even though it is not located on the island of Sumatra, the Bangka Belitung Islands are an integral part of the island of Sumatra, because the Bangka Belitung Islands Province was formerly part of the South Sumatra Province. Among the ten provinces in the Sumatra region, the Bangka Belitung Province HDI in 2021 reaches 71.69 percent. This shows an increase in HDI of 0.22 percent from the previous year. With this HDI level, Bangka Belitung Province is ranked sixth in the "high" category. However, at the national level, the HDI of Bangka Belitung Province is ranked sixteenth out of thirty-four provinces. The position of the Bangka Belitung Province at the national level is in the middle, meaning it is not at the top but also not at the bottom [2].
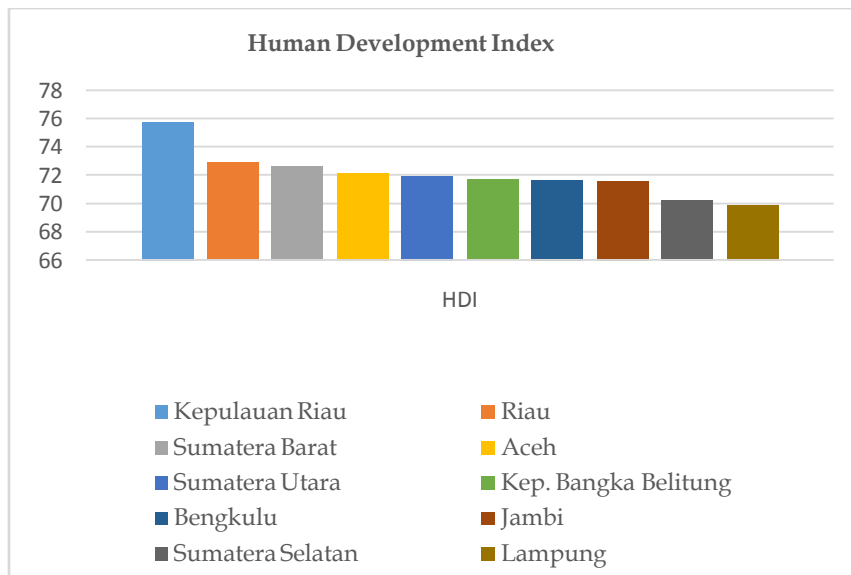
Figure 1. Indonesia Growth Index (percent) 2015-2022.

sources: Statistic Indonesia, 2022

The Bangka Belitung Archipelago Province is divided into two main islands namely, Bangka Island and Belitung Island. Separate geographic locations result in each island having different economic structures which have an impact on the achievement of economic development in each region. BPS data for 2022 states that the economy of Bangka Island is dominated by the manufacturing industry sector by 22.16 percent while Belitung Island is dominated by the agriculture, forestry and fisheries sector by 26.94 percent [3].

Figure 2. Human Development Index on Sumatra Island in 2021.

Source: Statistic Indonesia, 2021

Real economic growth can be seen from GRDP at constant prices (ADHK). The presentation of ADHK GRDP illustrates the development of real production without being influenced by price factors, both as a whole and by category. The economic conditions of Bangka Island, Belitung Island and as a whole the Bangka Belitung Islands Province show a declining pattern during the 2015-2022 period. This was caused by the Covid-19 pandemic and changes in government regulations in 2018 regarding tin exports. As a result, many mining companies and private smelters stopped their production thereby affecting the economic sector because tin is a superior product from Bangka Belitung Province. Not only that, the agriculture, forestry and fisheries sectors also contributed to the economic slowdown caused by low prices for palm oil, rubber and pepper.

According to [4] human capital is an important factor supporting a country's economic growth. This is supported by previous research conducted by [5], [6], [7] which states that the Human Development Index has a significant effect on economic growth. The achievement of increasing human capital is influenced by factors supporting the quality of human capital such as education and health. An increase in one's education is associated with an increase in income or wages earned. The higher the education, the higher the productivity so as to increase national economic growth. Besides education, health also affects economic growth directly and indirectly, including improving population health which will increase labor force participation. Health improvements can also lead to increases in education which then contribute to economic growth [8].

There have been several studies on the influence of the Human Development Index on economic growth in Indonesia, but not many researchers have used the Bangka Belitung Islands Province as a research object. For that reason, the author chose the Bangka Belitung Islands Province as a research innovation that contains the influence of the composite indicators of the Human Development Index including Life Expectancy, Average School Length, School Length Expectation and Per Capita Income on the economic growth of the Bangka Belitung Islands Province.

II. LITERATURE REVIEW

Human Development Index (HDI)

UNDP (United Nations Development Programme), provides an understanding that human development is a process to enlarge choices for humans. The concept or definition of human development basically covers a very broad dimension of development. In the concept of human development, development should be analyzed and understood from a human perspective, not only from economic growth [9].

Economic growth

According to Sukirno (2006: 9) "Economic growth is a picture of economic development in a certain period when compared to the previous period and this development is expressed in the form of a percentage change in national income in a period compared to the previous period". Changes in national income are changes in the value of goods and services produced by the country in a certain period whose value is called the Gross Domestic Product (GDP) or Gross National Product (GNP) [10].

Life Expectancy (AHH)

Life expectancy (AHH) is the average number of years that a person can live (on average). Life expectancy is calculated using an indirect approach (indirect estimation). This indicator is often used to evaluate government performance in improving the welfare of the population, especially in the health sector [11].

Average Length of School (RLS)

The educational indicator used in calculating the HDI is the average length of schooling. This indicator provides an overview of the average time spent by residents in formal learning activities. The population used in calculating the average length of schooling is the population aged 15 years and over. The average length of schooling can also be used to evaluate the implementation of the 9 year 29 Compulsory Education Program that has been launched. This means that to pass the program's target, the average length of schooling must have reached 9 years or more. To get a job offered in the modern sector, it is based on a person's level of education and the level of income they have during their lifetime has a positive correlation to their level of education. This level of income is strongly influenced by the length of time a person obtains education [12].

Expenditures Per Capita (PP)

UNDP measures a decent living using the adjusted real Gross Domestic Product (GDP), while the Statistic Indonesia in calculating a decent standard of living uses the average real per capita expenditure adjusted for the Atkinson formula [13].

III. RESEARCH METHODOLOGY

Using secondary data taken from the Bangka Belitung Province Central Statistics Agency (BPS) for the 2015-2022 period. Data was taken from a sample of 6 regencies and 1 city, namely Bangka, Belitung, West Bangka, Central Bangka,

South Bangka, East Belitung and Pangkalpinang. The data analysis phase to be used is panel data regression Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model(REM). Selection of the best estimated model with the Chow test, Hausman test and Lagrange test if necessary.

$$GRDPit = \beta_0 + \beta_1 AHHit + \beta_2 RLSit + \beta_3 HLSit + \beta_4 PPit + \varepsilon it$$

where:

GRDP	= Gross Regional Domestic Product (million rupiahs)
AHH	= Life Expectancy (years)
RLS	= Average Length of Study (years)
HLS	= Old school expectation (years)
PP	= Expenditure Per Capita (thousand rupiahs)
ε	= Error term (error factor)
β_0	= Constant
$\beta_1 \cdots \beta_4$	= independent variable regression coefficient
i	= Observation (District/City)
t	= Amount of Time

IV. RESULTS AND DISCUSSION

Estimation results of the econometric model in the face with the approach Pooled Least Square (PLS)/ CEM, Fixed Effect Model (FEM) and Random Effect Model (REM) along with the results of the model selection test are summarized in Table 1.

Table 1.
Results of Panel Data Regression Econometric Model -Cross section

Variable	Regression Coefficient		
	CEM	**FEM**	**REM**
C	-10575337	-6643998.	-10679079
AHH	-120809.1	-234860.4	-192329.0
RLS	-394648.6	-1432860.	-1224392.
HLS	2301584.	1507205.	1747856.
PP	161.6075	1886.770	1611.027
R^2	0.274691	0.804735	0.412434
Adjusted. R^2	0.217804	0.761343	0.366351
Statistics F	4.828706	18.54559	8.949701
Prob. Statistics F	0.002222	0.000000	0.000015

Model Selection Test

A. Chow
   Cross- Section $F_{(6,45)}$= 20.358633; Prob. $F_{(6,45)}$ = 0,0000

B. Hausman
   Cross-Section random $h^2 (4)$ = 2.488386; Prob. h^2 = 0.6467

C. Lagrange Multiplier
   Cross-Section Breusch-Pagan = 64.27541 ; Prob. = 0.0000

Sources: Eviews 9

Chow's test shows that FEM was selected as the best estimated model, as seen from the probability or significance in the Chow test, it has a prob value of 0.0000 <0.05. The Hausman test shows REM is selected as the best model seen at a probability or significance of 0.6467 > 0.05. Meanwhile, the Lagrange Multiplier test shows that REM was chosen as the best model, seen in the value of Both Breusch-Pagan of 0.0000 <0.05. So the complete estimation results from the selected estimated model are REM, shown in Table 2.

Table 2.
Estimation *Random Effect Model (REM)*

$$GRDP_{it} = -10679079 - 192329.0\ AHH_{it} - 1224392.RLS_{it} + 1747856.\ HLS_{it} + 1611.027\ PP_{it}$$
$$(0.4979)(0.2039) \qquad (0.2033) \qquad (0.0014)^*$$

$R^2 = 0.412434$; Adj $R^2 = 0.366351$; F.Stat = 8.949701; Prob F-Stat = 0.000015

Information: *Significant at α = 0.01; ** Significant at α = 0.05; *** Significant at α = 0.10; The number in brackets is the probability of the t statistic.

Sources: E views 9

From Table 2 it can be seen that the estimated REM model exists with a probability or empirical statistical significance F of 0.0000 (<0.01), with a coefficient of determination (R2) of 0.412434; which shows the REM estimated model has very high predictive power. However, this predictive power must be interpreted critically, because separately from other variables in the econometric model, it turns out that only one variable, namely the per capita expenditure variable, has an effect on GRDP, with a probability or statistical empirical significance t of 0.0014 (< 0.05).

The Per Capita Expenditure Variable has a regression coefficient value of 0.0014. That is, if Per Capita Expenditure increases by 1 percent, the GRDP will increase by 0.0014 percent. Preferably, if per capita expenditure has decreased by 1 percent, then GRDP will have decreased by 0.0014 percent.

Effect of Life Expectancy on GRDP

The selected estimation model explains that the life expectancy variable has a negative influence on economic growth in Bangka Belitung with a probability of 0.4979 > 0.05. The results of this study are in line with research conducted by Bayu and Ririt [14], which stated that life expectancy has a negative and insignificant effect on economic growth in Kediri Regency.

The Influence of Average School Years on GRDP

The selected estimation model explains that the average length of school variable has a negative influence on economic growth in Bangka Belitung with a probability of 0.2039 > 0.05. The results of this study are in line with research conducted by Nurul and Kurniyati [15], which stated that the average length of schooling has a negative and insignificant effect on economic growth in East Java Province.

The Influence of Old School Expectations on GRDP

The selected estimation model explains that the Long School Expectancy variable has a negative influence on economic growth in Bangka Belitung with a probability of 0.2033 > 0.05. The results of this study are in line with research conducted by Hera, Tri and Jahrizal [16], which stated that the Old School Hope has a negative and insignificant effect on the economic growth of districts and cities in Riau Province.

Effect of Per Capita Expenditures on GRDP

The selected estimation model explains that the Per Capita Expenditure variable has a positive influence on the economic growth of the Bangka Belitung region with a probability of 0.0014 <0.1 meaning that when Per Capita Expenditure rises, GRDP will increase, because per capita expenditure will shift the balance point of national income to a higher level, it is hoped that economic growth will also increase more. The results of this study are in line with research conducted by Apriansyah, Rustamunadi and Dedi [17], which stated that there was a positive and significant influence on economic growth in Banten Province.

Table 3.
Region Effects and Constants

No	Region	Effect	New Constant
1	Bangka	1737451.	-8941628
2	Belitung	-1130628.	-11809707
3	West Bangka	3359590.	-7319489
4	Central Bangka	-2636821.	-13315900
5	South Bangka	-821962.2	-11501041,2

| 6 | East Belitung | 1343011. | -9336068 |
| 7 | Pangkalpinang | -1850641. | -12529720 |

Sources: E views 9

In Table 3. it can be seen that the area with the highest constant value is the West Bangka Sawahan region which is equal to -7319489. That is, related to the influence of the variables Life Expectancy, Average Length of Schooling, Expectation of Years of Schooling, and Per Capita Expenditures, the integrated data on economic growth is higher than that of other regions. While the lowest constant value is owned by the Central Bangka region, which is equal to -13315900. That is, related to the influence of the variables Life Expectancy, Average Length of Schooling, Expectation of Years of Schooling, and Per Capita Expenditures, the integrated data on Economic Growth is lower than that of other regions.

V.   CONCLUSION

After the panel data regression was performed, the Random Effect Model (REM) was chosen as the best estimation model. The Human Development Index Composite Indicator shows an increase of 0.22 percent from 2021, while the economic growth of the Bangka Belitung Province experienced a decline in 2020 due to the contraction of the Covid-19 Pandemic and changes in government regulations regarding tin exports but managed to revive in 2021.

The results of this study indicate that economic indicators, namely per capita expenditure (PP) have a positive and significant influence in increasing the economic growth of Bangka Belitung Province, while health and education indicators contain Life Expectancy (AHH), Average Years of Schooling (RLS) and Old Expectations School (HLS) has a negative and insignificant effect on the economic growth of Bangka Belitung Province.

VI.   ACKNOWLEDGEMENTS

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